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HAWAII'S RETAIL SEAFOOD VOLUME

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INTRODUCTION

This report presents new and revised tables on Hawaii's 1981 retail seafood volume based on a stratified survey of retail seafood establishments. Preliminary results of the survey were reported in May 1983 in "Survey of the broker and retail sectors of the fish markets in Hawaii: Final report" by SMS Research Inc.[1] That report extensively discusses the sample design, and data collection, and presents results by retail unit. This report provides estimates of retail seafood purchases by source and product state, retail seafood sales by destination, provides slightly modified totals by retail unit, and presents tables of retail seafood volume by county and species.

The Southwest Fisheries Center Honolulu Laboratory has carried out three extensive surveys of seafood markets. The first was an enumeration of wholesale trade in fresh and frozen seafood for 1979.[2-4] The second survey was a monthly survey of wholesale trade in 1981-82. This survey was terminated before its scheduled completion and results have not been published. The third survey covered the retail and broker sections of Hawaii's seafood market for 1981.

The major change from the seafood totals shown in the SMS Research Inc. report (see footnote 1) on the retail sector and this report results from a changed procedure for dealing with seafood sales. Minor changes in the extrapolation basis were also made. The contract report omitted from sales data all market units where the form of the product was significantly changed. This included all restaurants and institutional purveyors of seafood. To have a complete accounting of seafood sales at the retail level, we replaced missing data for the restaurants and institutional outlets with extrapolations from their seafood purchases. The extrapolation factor was the ratio of sold to purchased seafood for the rest of the market.

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[1] SMS Research. 1983. Survey of the broker and retail sectors of the fish markets in Hawaii: Final report. Southwest Fish. Cent. Honolulu Lab., Natl. Mar. Fish. Serv., NOAA, Admin. Rep. H-83-10C.

[2] [U.S.] National Marine Fisheries Service. 1982. Preliminary results of a survey of wholesale fish dealers in Hawaii. Southwest Fish. Cent. Honolulu Lab., Natl. Mar. Fish. Serv., NOAA, Admin. Rep. H-82-14.

[3] Cooper, James C., and Samuel G. Pooley. 1982. Total seafood volume in Hawaii's wholesale fish markets. Southwest Fish. Cent. Honolulu Lab., Natl. Mar. Fish. Serv., NOAA, Admin. Rep. H-82-15.

[4] Cooper, James C., and Samuel G. Pooley. 1983. Characteristics of Hawaii's wholesale seafood market. Southwest Fish. Cent. Honolulu Lab., Natl. Mar. Fish. Serv., NOAA, Admin. Rep. H-83-22.

When trying to compare the results of the retail survey with those of the wholesale survey, problems were experienced with intra-sector trade. The primary problem exists with the trade of large and small retail fish markets, where their sales to other retail outlets were substantial. This double counting has not been corrected in this report. However, it is interesting to note that the volume in pounds estimated by this survey for the wholesale sector (i.e., fish markets) and by the 1979 wholesale enumeration survey is roughly comparable even though this survey was not designed to thoroughly sample wholesale-retail firms: 24.5 million pounds in 1981 from the retail survey and 30.4 million pounds in 1979 from the wholesale survey. No conclusion can be made about changes between the 2 years because of the substantially different sampling techniques and the large variances associated with the retail survey.

Although the question of statistical error in the retail survey is important, it is not fatal. The overall standard deviation for retail purchases is 3.5 million pounds ($8.7 million) out of a total of 51 million pounds ($107 million) purchased.

The tables present the results in the following order:

Revised estimates of total retail trade

Sources of retail purchases

Destinations of retail sales

Species composition of retail purchases

Retail purchases by county.

All figures are rounded to 100,000's except for quantities less than 300,000, which are rounded to 10,000's.

DISCUSSION

Table 1 and Figure 1 show that most seafood is purchased by the general public through the usual retail outlets (supermarkets, grocery stores, and fish markets) but that hotels and restaurants are also major buyers of seafood. Institutional buyers represent a fairly small share of the local market. Table 2 and Figure 2 show a parallel conclusion about seafood sales.

Tables 3 and 4 and Figure 3 show that about 15% of seafood purchases comes directly from local fishing vessels whereas 50% comes through wholesalers. Sixty five percent is locally purchased. Thirty-five percent is brought in from the U.S. mainland or foreign suppliers. Table 4 and Figure 4 show a near equality between fresh and frozen seafood purchases in Hawaii. These results are similar to those found in the 1980 survey of wholesale seafood dealers.

Table 5 and Figure 5 show that a considerable quantity of "retail" seafood sales is actually to other retail firms: retailers, restaurants, and hotels. The possibility of double counting in final sales is discussed in a forthcoming report. The subtotal indicates final seafood sales but a correction may need to be made in the extrapolation factor to account for the fish dealers weight in the sample.

Table 6 and Figure 6 show the species composition of Hawaii's seafood trade: tuna, mahimahi, and shellfish are the largest categories. However, large amounts of billfish (including swordfish), akule and opelu, and bottom fish are also purchased. The extrapolation bases for Tables 6 and 8 were different from the source and destination tables. This causes slightly different estimates of total seafood volume and indicates the extent of statistical variability in the survey.

Table 7 shows the distribution of retail seafood outlets across the four counties of Hawaii. Not surprisingly, most seafood was purchased on Oahu where most of the state's population resides, but the distribution between Maui and Hawaii Counties was relatively even (Table 8 and Fig. 7). Kauai County was not surveyed due to Hurrican Iwa: Kauai County totals were estimated from the distribution of retail outlets on the island and the average sales for similar units on Maui and Hawaii.

Table 1.--Hawaii retail seafood purchases by market unit (Revised), 1981.
(Totals may not sum due to rounding.)

	Pounds	Dollars
Supermarket chains	14,500,000	$26,900,000
Grocery stores	2,000,000	4,500,000
Retail fish markets (large)	15,800,000	24,900,000
Retail fish markets (small)	1,900,000	5,300,000
Military stores	800,000	1,300,000
Hotel chains	5,800,000	14,800,000
Small hotels	600,000	1,200,000
Seafood restaurants	2,000,000	7,400,000
Japanese and Chinese restaurants	1,700,000	4,700,000
Other restaurants	3,300,000	9,500,000
Catering firms	400,000	1,400,000
Fast food chains	1,300,000	2,400,000
Fast food independents	200,000	300,000
Federal and military restaurants	200,000	400,000
State and County facilities	60,000	100,000
Public schools	600,000	600,000
Private schools	400,000	700,000
Colleges and universities	80,000	140,000
Private medical facilities	130,000	210,000
Total	51,600,000	$106,700,000

Table 2.--Hawaii retail seafood sales by market unit (Revised), 1981.
(Totals may not sum due to rounding.)

	Pounds	Dollars
Supermarket chains	14,700,000	$27,400,000
Grocery stores	1,800,000	6,500,000
Retail fish markets (large)	10,200,000	33,600,000
Retail fish markets (small)	1,700,000	6,600,000
Military stores	1,000,000	2,300,000
Hotel chains	5,000,000	15,700,000
Small hotels	500,000	1,100,000
Seafood restaurants	1,700,000	5,600,000
Japanese and Chinese restaurant	1,400,000	3,900,000
Other restaurants	2,900,000	7,900,000
Catering firms	300,000	1,100,000
Fast food chains	1,100,000	2,600,000
Fast food independents	200,000	500,000
Federal and military restaurant	200,000	500,000
State and County facilities	50,000	120,000
Public schools	500,000	1,100,000
Private schools	300,000	700,000
Colleges and universities	70,000	160,000
Private medical facilities	110,000	270,000
Total	43,800,000	$117,700,000

Table 3.--Hawaii retail seafood sources by product state, 1981. (Subtotals and totals may not sum due to rounding.)

	Pounds	Dollars
Fresh		
Local		
Vessels	8,300,000	$18,100,000
Wholesale	6,300,000	16,300,000
Subtotal	14,500,000	34,400,000
Imports		
U.S. mainland	3,700,000	7,000,000
Foreign	1,200,000	2,600,000
Subtotal	4,900,000	9,600,000
Total	19,400,000	44,000,000
Frozen		
Local		
Vessels	130,000	270,000
Wholesale	13,200,000	30,100,000
Subtotal	13,300,000	30,300,000
Imports		
U.S. mainland	7,000,000	12,400,000
Foreign	3,300,000	5,700,000
Subtotal	10,400,000	18,100,000
Total	23,700,000	48,400,000
Processed		
Local		
Wholesale	5,500,000	10,400,000
Other	500,000	1,200,000
Subtotal	6,000,000	11,600,000
Imports		
U.S. mainland	600,000	1,200,000
Foreign	1,800,000	900,000
Subtotal	2,400,000	2,100,000
Total	8,400,000	13,800,000
NES	100,000	500,000
Total	51,600,000	$106,700,000

Table 4.--Hawaii retail seafood sources and product states, 1981. (Subtotals and totals may not sum due to rounding.)

	Pounds	Dollars
Sources		
Local		
Vessels	8,400,000	$18,400,000
Wholesale	25,000,000	56,800,000
Other	500,000	1,200,000
Subtotal	33,800,000	$76,400,000
Imports		
U.S. mainland	11,300,000	20,600,000
Foreign	6,300,000	9,200,000
Subtotal	17,600,000	$29,700,000
Total	51,600,000	$106,700,000
Product-State		
Fresh	19,400,000	$44,000,000
Frozen	23,700,000	48,400,000
Processed	8,400,000	13,800,000
NES	100,000	500,000
Total	51,600,000	$106,700,000

Table 5.--Hawaii retail seafood sales by destination, 1981.

	Pounds	Dollars
Outlet		
Public	18,900,000	$41,800,000
Other	200,000	500,000
NES	15,300,000	43,600,000
Subtotal	34,400,000	$85,900,000
Retailers	8,200,000	$27,500,000
Restaurants	800,000	2,900,000
Hotels	400,000	1,400,000
Total	43,800,000	$117,700,000

Table 6.--Species composition of Hawaii's retail seafood trade, 1981.
(Purchases)

	Pounds	Dollars
Tuna	11,600,000	$23,400,000
Ahi	(5,400,000)	
Billfish and shark	5,900,000	12,700,000
Mahimahi and ono (wahoo)	9,900,000	19,800,000
Akule and opelu	4,000,000	7,700,000
Bottom fish	2,600,000	7,800,000
Reef fish	3,500,000	5,900,000
Shellfish	8,200,000	17,400,000
Shrimp	(4,200,000)	
Lobster	(900,000)	
Other species	8,300,000	17,200,000
Salmon/trout	(1,500,000)	
Snapper	(1,800,000)	
Frozen filets	(2,300,000)	
Frozen sticks/blocks	(1,400,000)	
Total	54,000,000	$111,900,000

Table 7.--Distribution of Hawaii retail seafood establishments by county.

Economic unit[1]	Original statewide estimate	Oahu	Kauai	Maui Molokai Lanai	Hawaii
Markets					
Supermarket chains[2]	15				
Grocery stores	300	193	25	45	37
Fast food outlet					
Chains[2]	12				
Independents	152	115	15	8	14
Federal agencies					
Cafeteria	1	1	0	0	0
Military	56	52	0	0	4
State/County agencies					
Cafeteria	4	4	0	0	0
Correctional facility	6	3	1	1	1
Hospitals	8	3	0	1	4
Hotels/catering firms					
Chain and large resorts	81	37	14	16	14
Small hotels	211	97	20	62	32
Catering firms	97	64	5	16	12
Restaurants					
Seafood	49	32	2	12	3
Japanese/Chinese	126	101	7	6	12
Other	1,153	773	97	151	132
Retail fish markets					
Large	35	17	7	6	5
Small	44	34	0	3	7
Schools					
Primary/Secondary	376	264	24	39	49
College/University/ Trade Schools	16	12	1	2	1
Hospital (Private)	23	15	3	3	2
Nursing Homes (Private)	17	11	3	1	2

[1]Original lists of universe for each economic universe not available. Quantities were estimated with best available information.

[2]Could not be directly broken down by county.

Table 8.--Hawaii retail seafood trade (purchases) by county.

	Pounds	Dollars
Hawaii	6,100,000	$13,600,000
Oahu	31,100,000	67,100,000
Kauai[1]	7,100,000	14,500,000
Maui[2]	7,800,000	16,900,000
Statewide	52,100,000	$112,100,000

[1]Extrapolated from Hawaii and Maui Counties (see text).
[2]Maui county includes Molokai and Lanai.

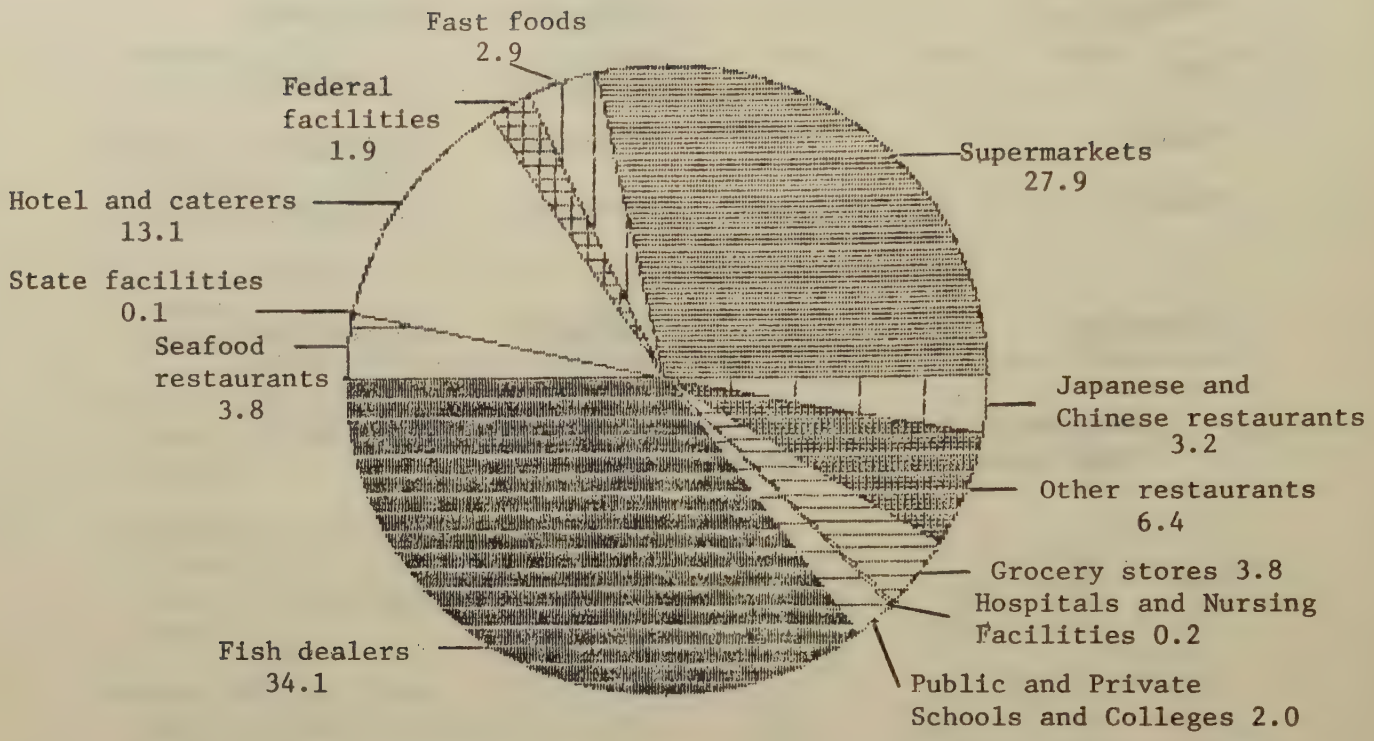

Figure 1.--Hawaii retail seafood purchases by economic unit.
(Percentage of total pounds purchased.)

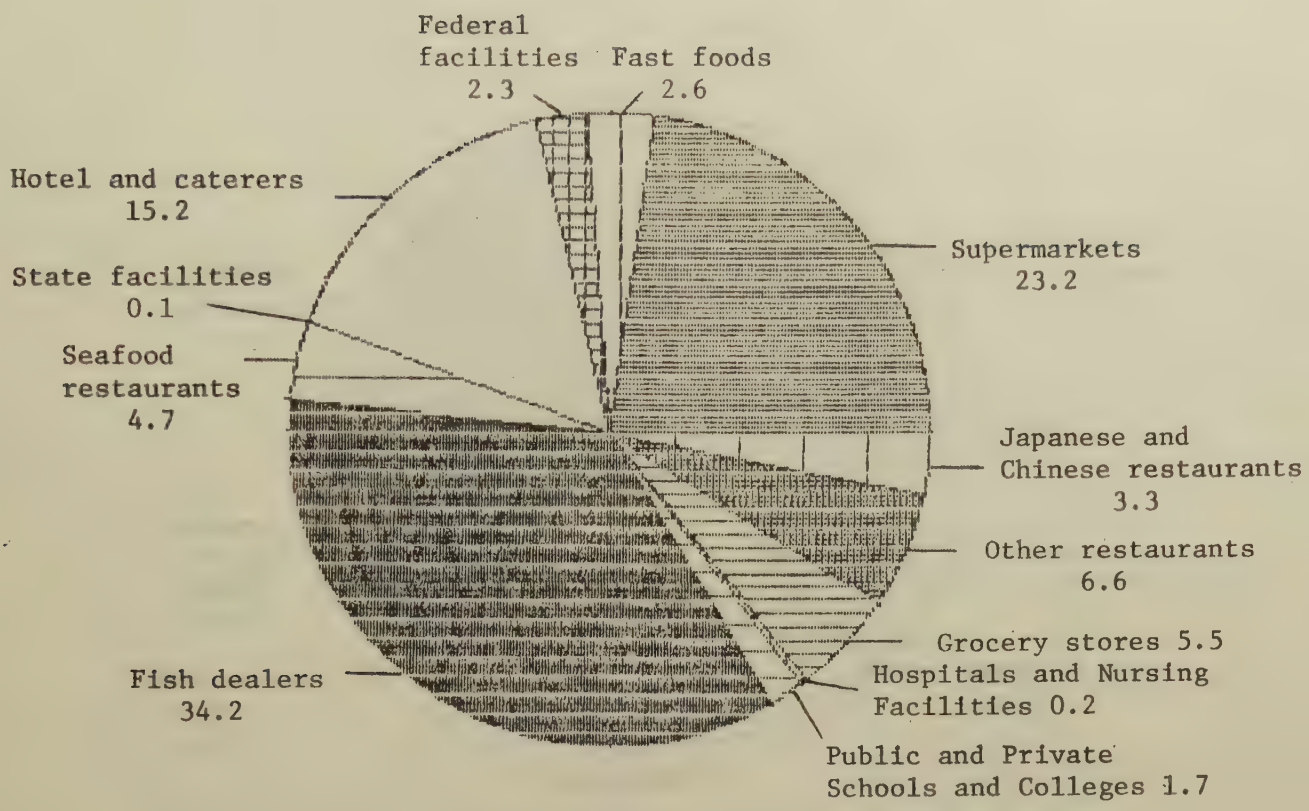

Figure 2.--Hawaii retail seafood sales by economic unit.
(Percentage of total revenue.)

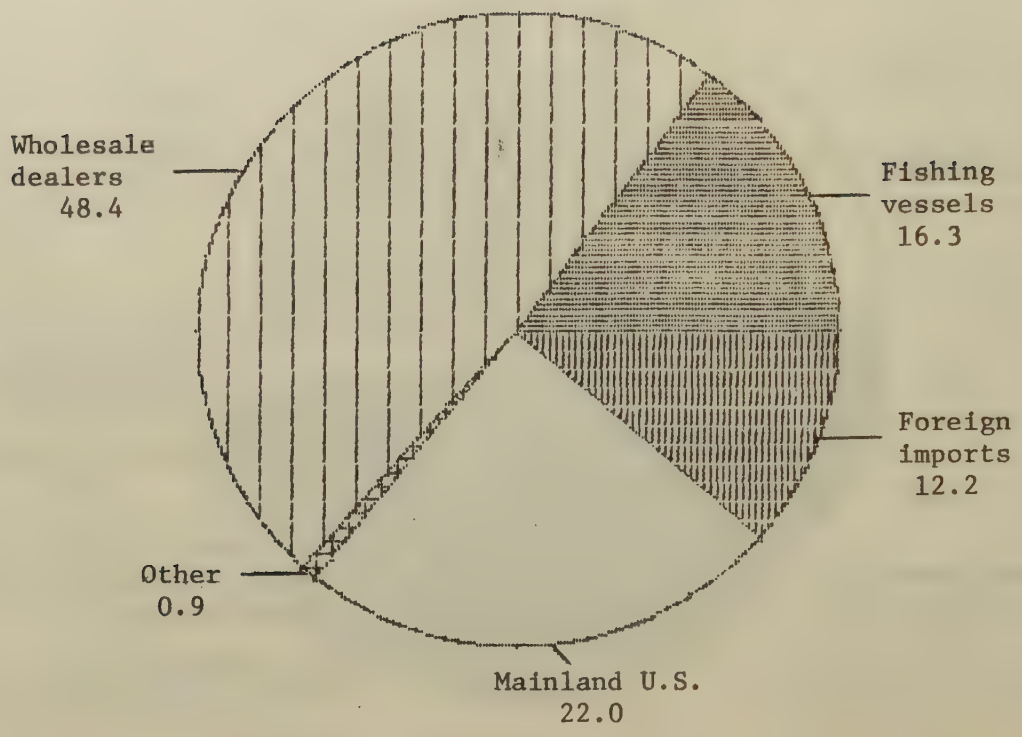

Figure 3.--Hawaii retail seafood purchases by source. (Percentage of total pounds purchased.)

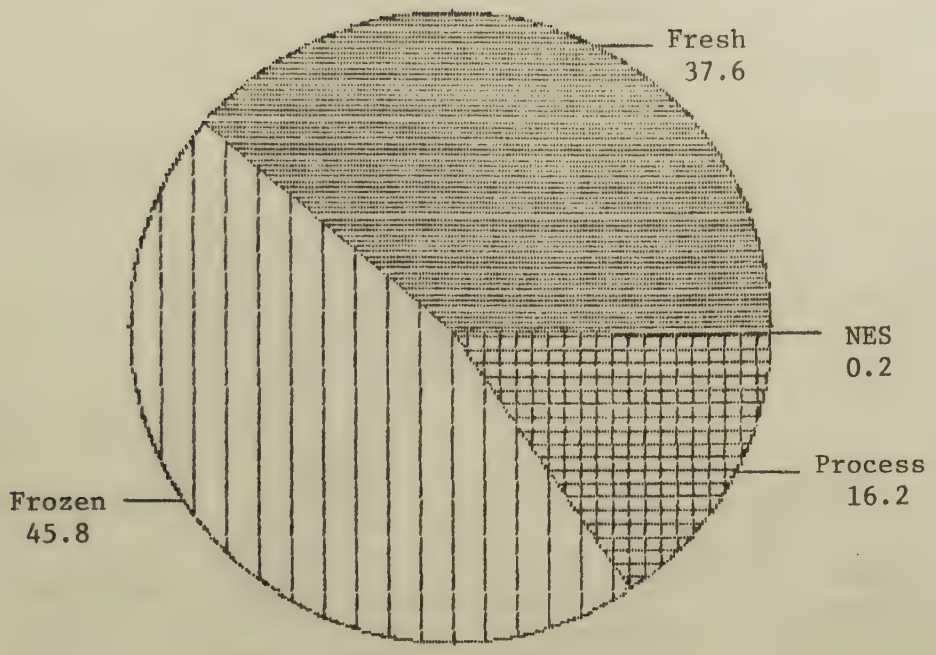

Figure 4.--Hawaii retail seafood purchases by product state. (Percentage of total revenue.)

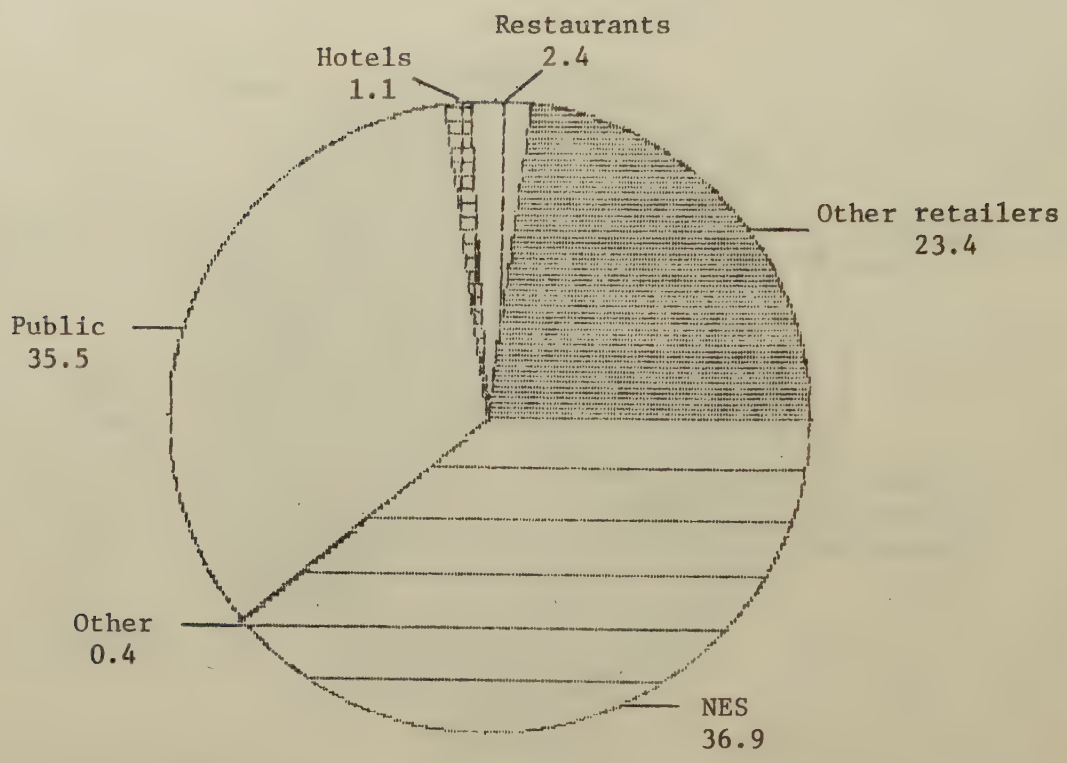

Figure 5.--Hawaii retail seafood sales by destination.
(Percentage of total revenue.)

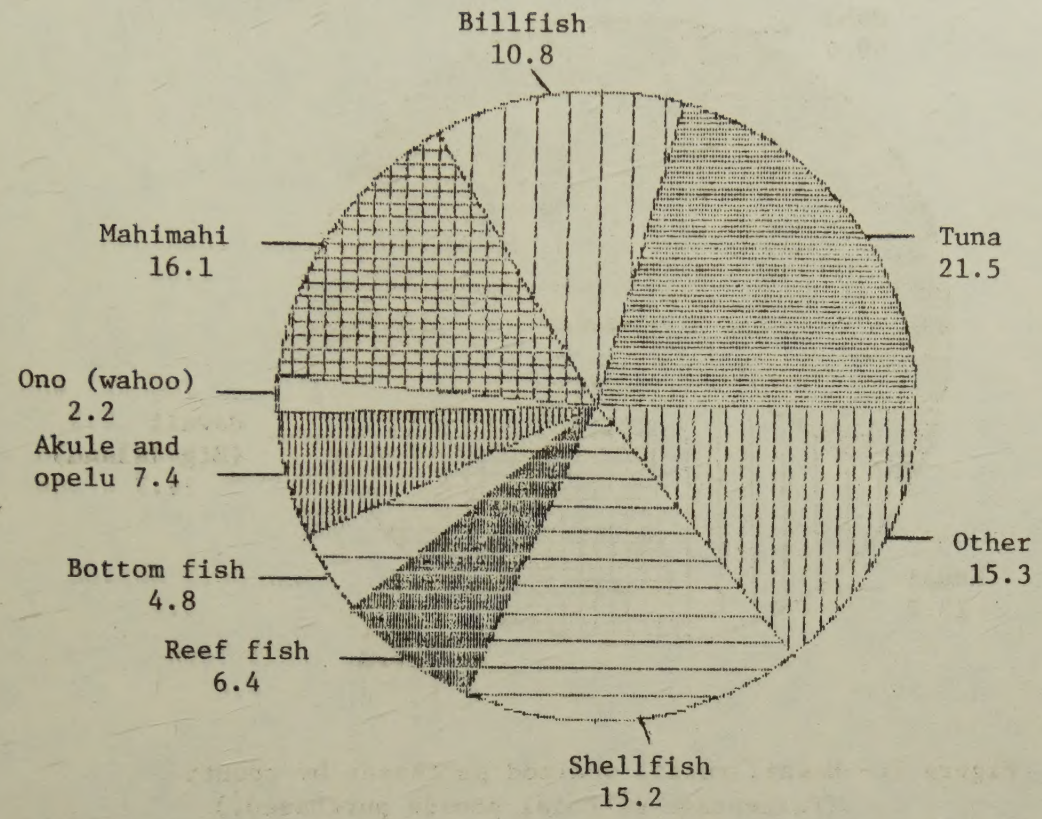

Figure 6.--Species composition of Hawaii retail seafood purchases. (Percentage of total pounds purchased.)

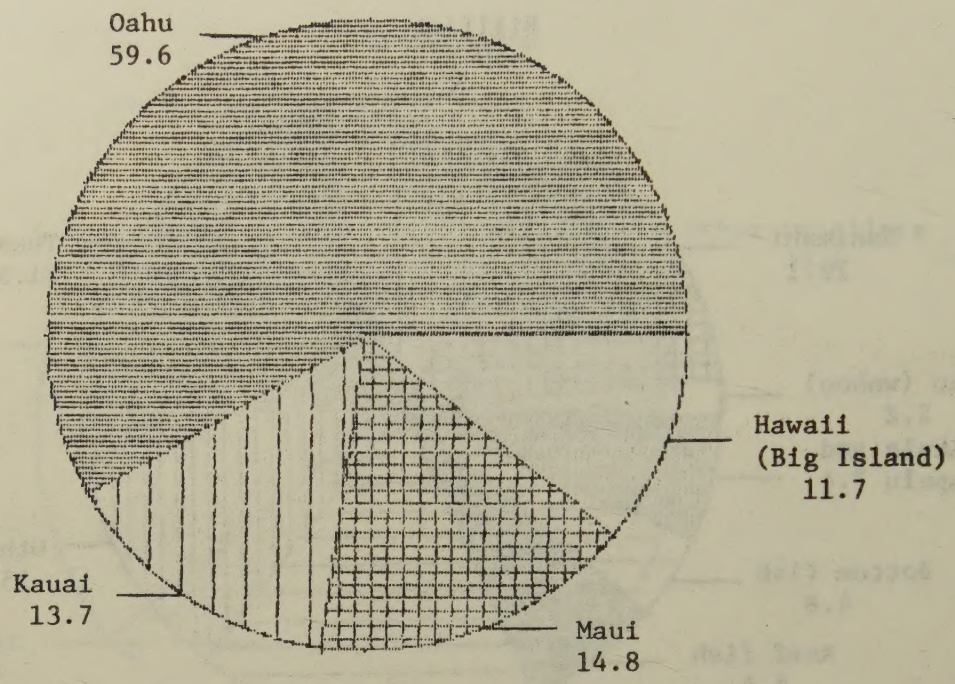

Figure 7.--Hawaii retail seafood purchases by county.
(Percentage of total pounds purchased.)